Breakdown of Gluten Proteins Using a Newly Identified Combination of Fruit Derived Enzymes to Alleviate Symptoms of Gluten Intolerance

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BACKGROUND- Three million people in the U.S alone suffer from gluten intolerance/celiac disease. My aim is to identify which of the natural fruits, and herbs have the ability to breakdown gluten and can reduce gluten intolerance. I selected kiwi, papaya skin, papaya leaf, pineapple, gooseberry, tulsi, dry amla (gooseberry) powder, fenugreek, ajwain, ginger, and kimchi as test materials for my experiment. EXPERIMENTAL METHODS- I used a gluten testing kit to detect gluten in the substances. It contains strips with the G12 anti-gliadin antibody that specifically recognizes the gluten fraction and results in the appearance of a red line. In the absence of gluten, no red line appears. The intensity of the red line diminishes with the breakdown of gluten. I mixed wheat and the test materials with different ratios of wheat and test materials (1:1 or 1:3), to extract and to evaluate the potency of test materials in the breakdown of gluten proteins. RESULTS- Of the multiple natural substances tested, I found that when papaya skin, Kiwi, and pineapple extract are mixed individually with the wheat solution, these fruits were able to break down the gluten. Ginger is also a promising candidate but not as effective as these fruits. These fruits have different digestive enzymes that played the main role in breaking down gluten. Also, I found that the combination of these three fruit extracts when mixed with wheat flour, demonstrated a synergistic effect in the breakdown of gluten. This is a novel finding.

Awards Won:

University of Arizona: Renewal Tuition Scholarship